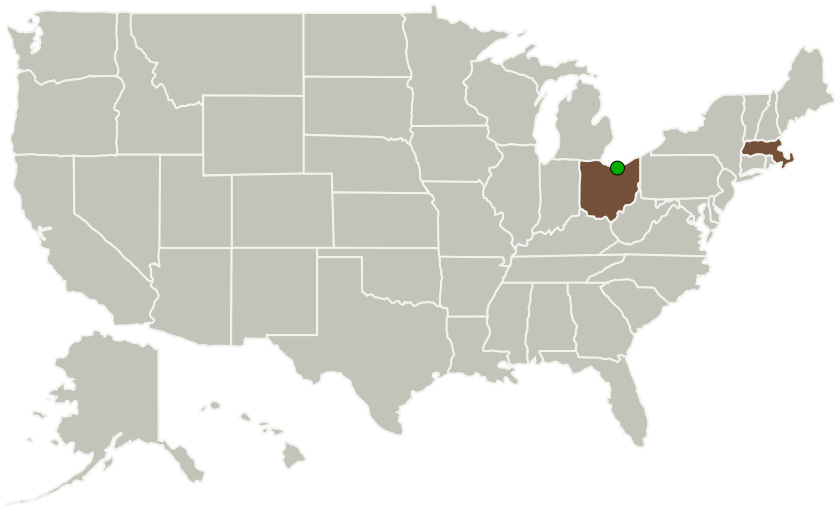
rHEALTH X with Non-Invasive Capabilities for Science and Crew Health, Phase II

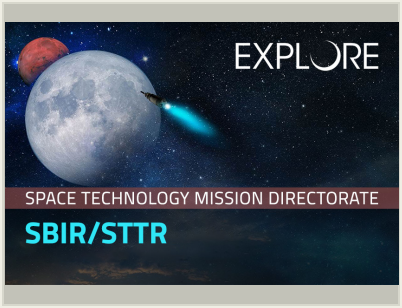
Completed Technology Project (2015 - 2018)

Project Introduction

There is an extraordinary need for a universal biomedical analyzer that has broadly flexible capabilities for cell studies, small animal experiments, and crew member health. The goal of our rHEALTH X device is to create a single palm-sized device with tripartite capabilities: non-invasive measurements, cell cytometry analysis, and multiplexed nanostrip tests. Currently, there is no single device that is able to provide comprehensive non-invasive measurements, let alone combine it with the rHEALTH's significant wet laboratory analytical capabilities. We have developed the existing rHEALTH technology in collaboration with NASA and here, in this Phase II proposal, we intend to further push the envelope and develop a fully integrated solution. The non-invasive module will include measurements of heart rate, SpO2, body temperature, respiratory rate, and EKG. The module will be housed in the back of the rHEALTH X and will be fully detachable for wireless/wearable applications. The main unit will provide wet laboratory capabilities for cells and nanostrips. At the end of Phase II, we will deliver a rHEALTH X with vitals patch to NASA and bring it up to TRL 7, so that it can be flight-certified and flown on the International Space Station (ISS) in a timely manner.

Primary U.S. Work Locations and Key Partners





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Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
The DNA Medicine Institute	Lead Organization	Industry	Cambridge, Massachusetts
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Massachusetts	Ohio

Project Transitions

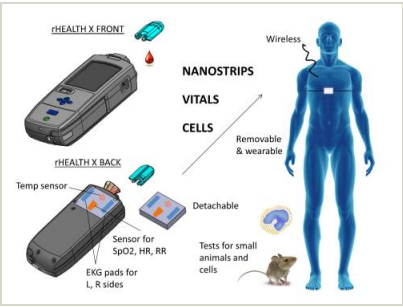
June 2015: Project Start

July 2018: Closed out

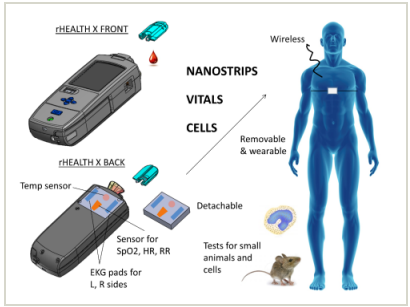
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137577)*

Images



Briefing Chart
rHEALTH X with Non-Invasive Capabilities for Science and Crew Health Briefing Chart *(https://techport.nasa.gov/image/130881)*



Final Summary Chart Image
rHEALTH X with Non-Invasive Capabilities for Science and Crew Health, Phase II Project Image *(https://techport.nasa.gov/image/129532)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
The DNA Medicine Institute

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Eugene Y Chan

Co-Investigator:
Eugene Chan

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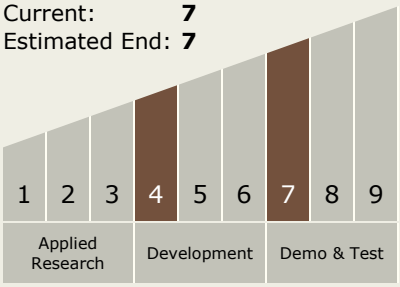
Technology Maturity (TRL)

Start: **4**
Current: **7**
Estimated End: **7**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.3 Human Health and Performance
    - TX06.3.1 Medical Diagnosis and Prognosis

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System